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SWINE PRODUCTION TECHNICIAN

Course: **Swine Behaviour and Production 33**

Program: Green Certificate

Credits: 6

Corequisite: CTR1210: Personal Safety (Management)
Note: Students are required to complete the corequisite course prior to or concurrent with their enrollment in the first course of the Swine Production Technician specialization.

Description: Students study swine behaviour, demonstrate the knowledge and ability to handle breeding stock, feed swine, recognize specified swine disorders and diseases, maintain facilities, safely operate and maintain farm equipment, perform basic record keeping, and demonstrate effective and appropriate employability skills.

Parameters: Each of the three courses that constitute the Swine Production Technician specialization is designed to be delivered off campus. The annual inspection and approval of the work station, and the monitoring, supervision and assessment of each student's progress and performance must be done in accordance with the procedures specified in the Off-Campus Education policy.

Curriculum and Assessment Standards

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate the ability to handle swine, by: – understanding and interpreting stock behaviour, including that of feeder pigs and weaner pigs – assisting pigs with mating • feed swine, by: – performing routine water maintenance duties – carrying out a feeding routine for swine of all ages	*Assessment of student achievement should be based on:* • ongoing assessment of student performance, which is conducted: – on a daily basis by the student's on-farm trainer in regular consultation with the student's supervising teacher • certification testing, which is conducted by a Green Certificate Assessor designated by AAFRD and includes: – a performance assessment of practical knowledge and skills – a written examination. Successful completion of this course will be credited toward the attainment of the Swine Production Green Certificate Technician credential.	30% 20%

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Course: Swine Behaviour and Production 33 (continued)

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:		
• help maintain swine health, by: – demonstrating an understanding of factors affecting swine health – recognizing signs of disorders and diseases		15%
• maintain facilities and operating equipment, by: – demonstrating knowledge of workplace hazards – demonstrating safe work practices		10%
• operate, safely, maintain and care for a power washer, as well as hand and power tools		10%
• perform basic record keeping		5%
• demonstrate effective and appropriate employability skills.		10%

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Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
Definition of Terms	*The student will:* • define the following terms: – farrow – farrow-to-finish – piglet – sow – boar – feeder – weaner – grower – gilt – barrow – stag – ridgling – rupture	The local Alberta Agriculture, Food and Rural Development Green Certificate coordinator can advise on the appropriate resources to use in defining the terms.
Handling Swine • Breeding Stock Behaviour	• describe instincts of swine that affect their general behaviour • describe the general behaviour of swine • identify and describe conditions in a swine environment that influence swine behaviour • describe types of behaviour expected as a result of specific environments • describe the unique behavioural characteristics of boars, when housed alone or in groups: – when eating – when being moved – when penned – during breeding activities • describe the unique behavioural characteristics of sows, when housed alone or in groups: – when eating – when being moved – when penned – during breeding activities	General behaviour includes: • establishing and maintaining a pecking order • huddling • biting • scratching • rooting • wallowing • manuring habits. Environmental factors include: • barn temperature • noise • confined conditions • air quality.
• Safe and Humane Operator Behaviour (continued)	• describe effective operator behaviour needed for efficient and humane handling of swine • identify and describe aids used in handling swine • identify and describe potential hazards when handling breeding stock • describe safety practices used to protect the operator in hazardous situations	Aids include: • handling boards • slappers • canes • prods. Potential hazards include: • getting bitten, knocked down or stepped on. Protective gear includes: • gloves • ear and eye protection • head gear • handling boards.

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Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• Safe and Humane Operator Behaviour	• demonstrate effective and humane pig handling techniques during the production cycle for sows and boars when they are: – feeding – being moved – penned – engaged in breeding activities	Handling techniques should include: • using aids appropriately • planned movement of animals • operator remaining calm • ensuring animals are not physically abused • ensuring noise is minimized.
• Feeder Pig Behaviour and Handling	• describe the unique behavioural characteristics of feeders, when housed alone or in groups: – when eating – when being moved – when penned – when with sows • identify and describe factors in piglet and feeder pig environments that influence their behaviour • identify and describe the potential meat grading and quality consequences of handling swine roughly and with damaging treatments • identify and demonstrate effective and humane behaviour when handling feeder pigs that are: – feeding – penned – being moved – being shipped – mating	Weaners are pigs that weigh between 6–20 kilograms. Growers are pigs that weigh between 20–50 kilograms. Feeders are pigs that weigh between 60–100 kilograms. Meat quality can deteriorate and is worth less when/if the animal is: • bruised • injured • stressed. Shipping procedures include: • weighing the animals • sorting them into pens • removing food sources • applying a shipping tattoo.
• Weaner Pig Behaviour and Handling	• describe the unique behavioural characteristics of weaners, when housed alone or in groups: – when feeding – when being moved – when penned – when with sows • identify and describe factors in the environment of weaner pigs that influence their behaviour	Behavioural characteristics may include: • huddling behaviour • pecking order • vices—tail biting, ear biting, navel sucking • fighting • resistance to new environment.
(continued)		

Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• Weaner Pig Behaviour and Handling	• identify and describe the potential meat grading and quality consequences of handling swine roughly and with damaging treatments • identify and demonstrate effective and humane behaviour when handling weaner pigs • describe potential consequences of rough or damaging handling of weaner pigs • describe activities necessary for the efficient and humane handling of weaner pigs	Influencing factors include: • heat levels • noise • air quality • drafts • stocking density • feed quality • pen cleanliness.
• Swine Production Code of Practice	• define and describe the purpose of a code of practice • identify and describe elements for a swine producer's code of practice • identify and describe nutrition and health standards applicable to producers of meat for human consumption • identify and describe the notion of producer stockmanship • describe swine producer stockmanship standards for the management of: – nursing sows – piglets – weaners – growers/finishers – breeding and gestation – boars • identify and describe handling and transportation standards that can affect profitability when: – handling pigs – caring for pigs in transit – shipping pigs	A swine code of practice may include: • housing factors • nutrition and health factors • environmental factors. Piglet care may include: • tooth trimming • tail trimming • castration • iron supplements. Standards may relate to: • transportation space • heat/cold protection • availability of feed and water, and opportunity for rest.

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Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
• Animal Mating	*The student will:* • identify and describe the basic goals/targets of herd management and operating strategies • explain the concept of rule of thumb • identify and describe rules of thumb relating to swine production • identify and describe factors affecting the efficiency of breeding activities and performance of: – sows – boars • describe the three stages of estrus: – proestrus – estrus – metestrus • identify and describe physical and behavioural signs of each stage of estrus • identify and describe the optimum sow to boar ratio • describe and demonstrate appropriate strategies for introducing a new boar—young or old—into the breeding program • describe the unique considerations when breeding gilts • define heat periods • describe procedures used to detect heat • assist in breeding gilts • determine heat periods in appropriate sows • describe and demonstrate "hand-mating" procedures of sows in a sow barn • perform appropriate production recording procedures.	Goals/targets may include: • sows per year • revenues and profits relative to production. Rules of thumb may include: • per cent of farrowing rate • breeding efficiencies • feeding efficiencies • per cent mortality. Factors influencing efficiency may include: • physical performance, age and experience of boars • strength of the estrus for sows • timing of mating • season, temperature • housing systems. Typical sow to boar ratio is 1:20. This number may be increased through artificial insemination. Boar should: • be 7–8 months old • have a minimal number of breeding activities • be placed with a nonaggressive sow. Production recording systems vary. Key records usually include: • boar/sow match • efficiency/effectiveness of the mating • habits of sow and boar.

Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
	The student will:	
Feeding Swine • Watering	• identify and describe the basic daily water requirement for different classes of swine	Water is most critical for farrowing and dry sows.
	• identify the class of swine for which adequate supply of water is most critical	Water shortage affects the animals': • behaviour • feeding behaviour • stress level.
	• describe the effects of inadequate water supply to swine	
	• describe the effects of restoring water supplies to "dry" animals	A sudden restoration of water can cause water intoxication if the animal drinks too much.
	• monitor the water consumption of individual animals and groups of animals	Monitoring includes checking the flow rate of water for each animal; e.g., a lactating sow requires approximately 22 litres of water per day.
	• ensure that stock are properly watered	
	• identify alternative types of available waterers	
	• describe the main features of available waterers	
	• describe and demonstrate basic servicing procedures for available types of waterers	Changes in the types of available waterers in different locations can cause an animal difficulty.
	• identify water consumption problems that can arise when swine are moved around	
	• take appropriate action to remedy problems	Individual animals may need special measures to introduce and encourage them to water when using a system that is different from what they are used to.
• Feeding Routines	• define and explain the purpose of a feeding system	The primary distinguishing characteristic among rations is the percentage of protein each type of pig needs and each type of ration provides.
	• describe the main rations for different classes of swine	
	• describe the main ingredients in/characteristics of swine rations	Different rations are needed for: • dry sows • lactating sows • replacement gilts • boars • weaner pigs • grower pigs • feeders/finishers.
	• explain the rules of thumb for the daily quantities or volumes of rations consumed by different classes of swine	
	• explain why the expression "eating like a pig" is inappropriate	
(continued)		

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Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued) • Feeding Routines	*The student will:* • identify the main procedures for cleaning and maintaining feed boxes and troughs, and perform: – routine inspections – cleaning – maintenance • operate the available feeding system(s) for each class of animal to the specified routine.	Volumes consumed are calculated in kilograms per head or kilograms per pen of animals.
Biosecurity Protocols	• define a biosecurity protocol, and describe its purpose • identify and describe sources outside of the swine operation through which diseases may be introduced into the swine operation • identify and describe the available biosecurity protocol • demonstrate care and concern in following the available biosecurity protocol.	Disease can be carried onto a farm through: • new pigs • shipping trucks • other vehicles • barn workers and visitors' clothing • birds and insects • pests • artificial insemination.
Inspections for Disorders	• identify and describe the range of swine disorders • identify and describe signs of disorders in swine • identify and explain common production situations that may be confused with a disorder • identify and describe the herd management practices, including herd inspections, affecting herd health • demonstrate routine inspection and disorder recording and reporting procedure.	Ranges of disorders include: • movement, activity, alertness • body appearance • manure and urine colour and texture • appetite and thriftiness. Signs of disorders include: • stance • body colour • condition of the ears and eyes • breathing • head and foot position • proximity to others. Production situations that may be confused with a disorder include: • heat/cold extremes • farrowing/weaning behaviour • estrus • stress.

Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
Personal Hygiene Practices	*The student will:* • identify and describe the technician's personal hygiene practices that can affect swine health • describe how infectious and contagious diseases may be transmitted through the technician's daily contact with the herd.	Expected personal hygiene practices include: • clean body, especially hands • clean clothes • using gloves, where appropriate • use of personal protective equipment.
High Pressure Washers	• identify and describe the purpose of high pressure washers • identify and describe the components of a high pressure washer • describe the operating and safety features of an available high pressure washer • identify and describe the potential for injury to the operator and others, and to animals, when using a high pressure washer • describe the appropriate safety gear that should be worn when operating a high pressure washer • describe and demonstrate the set-up procedure for an available high pressure washer • identify and describe components of a high pressure washer requiring periodic checks and maintenance • demonstrate appropriate maintenance services.	Components of a high pressure washer include: • pump and motor • heating system • nozzle and gun controls. Safety features include: • release valve • temperature control • automatic shut-off. Injuries may be caused by: • pressured spray hitting people or animals • scalding • disinfectant hazards. Areas requiring checks and maintenance include: • pump oil level • grease level • nozzle • electrical power cord and supply • hose.
Hazards and Safety Practices (continued)	• identify and describe hazards associated with handling swine • identify and describe operator behaviour that can minimize the risk of injury • identify and describe types of power machinery used in farming swine	Potential hazards include: • aggressive boar behaviour • footing • air quality/breathing problems • back injuries • dust.

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Course: Swine Behaviour and Production 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued) Hazards and Safety Practices	*The student will:* • identify and describe hazards associated with each type of machine • identify and describe safe operating procedures for each machine, including the use of appropriate personal protective equipment • describe situations that require the use of the following personal protective equipment, and demonstrate the use of each item: – ear protection – eye protection – breathing protection—masks and/or respirators.	Each item of personal protective equipment should meet or exceed safety standards required to deal with the specific hazard.
Hand, Shop and Power Tools	• identify different types and sizes of hand tools and accessories needed on a farm, including: – screwdrivers – hammers – chisels – wrenches – pliers – cutters – rasps • describe and demonstrate the safe and correct use of each type of available hand tool and accessory • demonstrate correct selection and use of hacksaw blades for specific tasks • identify different types of power tools commonly used on a farm • describe hazards associated with each power tool • demonstrate correct use of each available power tool.	Screwdriver types include: • flat • Phillips • Robertson. Wrench types include: • box • open • adjustable • socket. Plier and cutter types include: • slip joint regular • pump type • side cutters • long/needle-nose. Hammer types include: • nail • ball-peen • sledge • claw • mallets. Chisel types include: • cold • punches • centre drift • wood • pin. Rasp types include: • wood • coarse • fine • metal.

Concept	Prescribed Specific Outcomes	Notes
Basic Record Keeping	*The student will:* • identify, describe and explain the purpose of information and data gathered as part of a farm's record keeping protocol/system • identify and describe the information and data gathered for a farm's: – breeding recording system, including breeding dates, boar information and services – weaning recording system, including weight and age – health recording system, including medications given to individual animals – feeder barn records, including days in the barn, deaths, treatments • demonstrate the ability to access and input information and data.	Each farm and swine operation will tend to have developed its own protocol/system for keeping records. Similarly, record keeping systems may be manual, computerized or a combination of both. Recorded information and data will usually relate to: • farrowing production measures and indices • health measures and indices • grower/finisher production measures and indices. Students should receive instructions from their supervisor before inputting or changing records.
Personal Work Skills	• demonstrate employability skills, including: – verbal and nonverbal communication – goal setting and career planning – time management – basic financial management.	Students should be advised that their personal work skills will be expected to improve throughout their involvement in the Green Certificate Program. Assessment of personal work skills will be based on growth from previous assessments of personal work skills.

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Course: **Swine Handling and Welfare 33**

Program: Green Certificate

Credits: 5

Corequisite: CTR1210: Personal Safety (Management)
Note: Students are required to complete the corequisite course prior to or concurrent with their enrollment in the first course of the Swine Production Technician specialization.

Description: Students demonstrate their ability to wean pigs, operate feed handling equipment, castrate baby pigs, operate a manure handling system, monitor and maintain facility environmental controls, and demonstrate effective and appropriate employability skills.

Parameters: Each of the three courses that constitute the Swine Production Technician specialization is designed to be delivered off campus. The annual inspection and approval of the work station, and the monitoring, supervision and assessment of each student's progress and performance must be done in accordance with the procedures specified in the Off-Campus Education policy.

Curriculum and Assessment Standards

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate the ability to handle swine, by: – weighing swine – performing weaning procedures	• ongoing assessment of student performance, which is conducted: – on a daily basis by the student's on-farm trainer in regular consultation with the student's supervising teacher	20%
• feed swine, by: – operating and maintaining feed handling equipment	• certification testing, which is conducted by a Green Certificate Assessor designated by AAFRD and includes: – a performance assessment of practical knowledge and skills – a written examination.	15%
• maintain swine health, by: – identifying and treating farrowing-related problems – performing new birth piglet procedures	Successful completion of this course will be credited toward the attainment of the Swine Production Green Certificate Technician credential.	25%

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Course: Swine Handling and Welfare 33 (continued)

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will: – identifying and describing fostering practices – castrating baby swine – maintaining cleanliness and sanitation standards		
• handle waste, by: – demonstrating knowledge of a manure management code of practice – performing clean-out routine – operating a manure handling system – demonstrating knowledge of gas hazards in confined spaces, where necessary		15%
• maintain facilities, by: – monitoring and maintaining facility environmental controls		15%
• demonstrate effective and appropriate employability skills.		10%

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Concept	Prescribed Specific Outcomes	Notes
Handling Swine • Weighing Swine	*The student will:* • describe reasons for weighing swine; e.g.: – finisher hogs – piglets—just after birth – just before weaning • judge, visually, animals in a finishing pen, and decide when to start weighing for market weight • move a pen of animals to the weighing area • operate a weigh scale, and weigh and record each animal's weight • operate an appropriate scale to weigh baby pigs, and record weight data	Students should be able to relate weights of swine to the farm's performance tracking system.
• Performing Weaning Procedures	• identify and describe the stressors placed on sows by the weaning process • describe the effects of each stressor on a sow's health and production • identify and describe the stressors placed on weaner pigs by the weaning process • describe the effects of each stressor on piglet health and production • list and describe the farm's weaning protocol • follow the correct procedures in carrying out the weaning protocol • identify and describe the routine complications associated with weaning • make recommendations to the supervisor regarding corrective action for the complications identified.	Stressors on sows include: • loss of piglets • udder pressure • new environment • hormonal changes • physiological stress • type and level of feed. Stressors on weaner pigs include: • change of diet • loss of mother • change in environment • change in pen mates • increased competition • change of water source. Routine weaning complications include: • scours • navel sucking • starve out.

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
	The student will:	
Feeding Swine • Operating Feed Handling Equipment	• identify and describe the main components of the available feeding and feed handling system • describe the operation of each component • describe the operation of the available feeding system • identify and describe areas requiring periodic servicing • describe recommended service procedures.	System may include: • augers • storage bins • feed delivery and transfer systems. Handling and servicing procedures should only be performed with the consent of the student's supervisor and, where necessary, under the supervisor's supervision.
Swine Health • Farrowing	• identify and describe problems associated with farrowing • describe the consequences of each problem on sow and pig production efficiency and effectiveness if not attended to • describe the treatment protocol followed for each problem • identify, based on observations of farrowing sows, farrowing-related problems, and carry out the appropriate treatment protocol	Potential problems include: • difficulty birthing • savaging by sow • crushing of piglets • piglets access to colostrum (first milk) • lack of milk • prolapses • sick/dead sow • retained piglets and/or placenta.
• New Birth Piglet Procedures	• identify and describe the optimum age for carrying out the following procedures on newborn piglets: – teeth clipping – identification – tail docking – iron injections – castration • demonstrate the correct method to catch and to hold piglets prior to working on them • describe the degree of stress placed on a piglet when performing each specified procedure • demonstrate appropriate handling techniques, and perform each specified procedure • identify routine complications that may affect piglet health	Students should be aware of the Alberta Hog Industry's routine and code of practice, where specified. Piglets in a pen are generally very excitable and mobile. Piglets should be handled with minimal effort and without causing injury. Care should be taken to cause minimal stress to the animal when performing each procedure.
(continued)		

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• New Birth Piglet Procedures	• perform necessary treatments following farm protocols • identify and describe disadvantaged baby pigs • identify treatments given for: – splay legs – small, weak, chilled pigs – injured or crippled pigs	
• Fostering Practices	• explain the meaning of: – fostering – fostering on – fostering off • identify and describe types of fostering • identify and describe reasons for fostering baby pigs	Types of fostering include: • batch • back • split • cross.
• Castration of Baby Pigs	• describe the purpose of castrating baby pigs • describe personal and animal welfare concerns related to castrating a baby pig • identify and wear appropriate personal protective equipment prior to performing a castration • identify the basic structure of the scrotum and testicles of a baby pig • describe the effective and safe procedure for castrating a baby pig • castrate a baby pig • identify and describe potential post-castration complications • monitor animal health, and diagnose and treat post-castration conditions • identify and describe, in baby pigs, a case of: – rupture – ridgling	Students will be required to carefully observe and follow the farm's castration protocol, which includes: • treating the animal at the earliest possible age • causing the animal minimal stress • wearing appropriate protective equipment. Post-castration complications may include: • infection • excessive or prolonged bleeding • swelling. Post-castration treatments will be determined by the farm's protocol. Students will be expected to learn and be able to follow the farm's protocol.
(continued)		

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• Castration of Baby Pigs	• demonstrate appropriate action when identifying a case of rupture or ridgling	When in doubt, the student must always consult with the task supervisor.
• Sanitation and Cleanliness	• define cleanliness and sanitation • describe why sanitation and cleanliness are important to a swine operation • identify and describe methods used to maintain farm cleanliness and sanitation standards • identify and describe the effects of diseases that can affect swine facilities • distinguish between bacterial and viral infections • explain the purpose of each of the following, and explain the similarities or differences among them: – fumigants – disinfectants – germicides • demonstrate the proper use of fumigants, disinfectants and germicides, as available.	Vaccinations are used to protect animals from viral infections. Antibiotics are used to treat bacterial infections. Fumigants, such as formaldehyde, are usually used to eliminate lingering diseases.
Handling Waste • Manure Management (continued)	• describe and explain the meaning or purpose of the following: – waste storage structure – surface water runoff – groundwater – manure storage capacity – toxic and lethal gases generated from stored manure – liquid waste – solid and dewatered waste	

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• Manure Management	• describe his or her role in and relationship to waste management practices on a hog farm	
	• describe areas of waste management that can lead to community conflicts	Community conflicts can arise over the following issues: • odour • fumes • pollution • traffic • health concerns.
	• describe key operator procedures that can minimize the likelihood of community conflicts	
	• identify and describe personal and animal hazards associated with manure storage and waste handling	
	• describe practices used to minimize the effect of each hazard	
	• explain issues related to the importance of the disposal of dead stock	
	• describe the farm's protocol for handling dead animals, both small and large	
	• identify and describe local by-laws and regulations that address the disposal of dead animals	Students will be expected to take the initiative to search for local by-laws and regulations.
• Manure Handling Systems	• identify and describe the importance of having a manure handling system on a swine farm	Students will be expected to know and demonstrate tasks in each barn or pen, appropriate tool usage, the sequence of each task, and the procedure for moving manure from a pen to storage.
	• identify and describe the routine procedures followed when cleaning out manure: – daily – weekly – monthly	
	• explain why the handling of swine manure is more problematic than the handling of cattle manure	
	• identify and describe seasonal implications of handling manure	
(continued)		

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
(continued)	*The student will:*	
• Manure Handling Systems	• identify and describe potential health and welfare hazards, to the technician and to the animals, associated with cleaning out manure • identify, describe and explain the importance of the farm's standards of cleanliness for manure handling • identify and explain the importance of cleanliness and sanitation standards in relation to: – swine production – farm profitability – health management of animals • describe and demonstrate appropriate technician behaviour to minimize the risk of personal injury when cleaning out manure • demonstrate proper daily, weekly and monthly manure handling procedures	Potential hazards include: • back strain • wet floors • dust • manure gas • animal attacks. Hazard reduction approaches include: • wearing proper footwear • using proper lifting techniques • moving animals prior to cleaning out manure • safe operation of machinery and tools • adequate ventilation.
• Gas Hazards in Confined Spaces	• identify, name and describe the characteristics of gases that tend to be produced in swine operations, including: – ammonia (NH_3) – hydrogen sulphide (H_2S) – carbon monoxide (CO) – carbon dioxide (CO_2) • identify and describe manure locations and storage facilities that may be associated with hazardous gases • identify and describe the potential effect of each type of hazardous gas on humans and on animals • describe and demonstrate appropriate safety precautions to prevent the effects of hazardous gases.	Students may be encouraged to discuss the nature and characteristics of hazardous gases with their science/chemistry teachers. Safety precautions may include: • proper training prior to exposure • force ventilation • safety lines • buddy system • checking for gas hazards prior to entering facility • working upwind from hazardous gases.

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
Confined Hazardous Spaces	*The student will:* • define and give examples of confined spaces • locate areas on a farm that may be described as confined spaces • assess work spaces for potential hazards • identify and describe, for each potentially confined space area, precautions, equipment and safe practices necessary for minimizing identified hazards • demonstrate appropriate procedures for the locking-out of utility services, including water, electrical and fuel • conduct an appropriate test of air quality and the oxygen levels in confined spaces • describe personal hazards associated with: – flammable vapors – hot work activities; e.g., heating, welding – toxicity • identify, describe and demonstrate the use of personal protective equipment suited for use in selected confined space areas • describe options for dealing with emergencies in confined spaces.	The delivery of instruction in confined space safety will be dependent on the need for these skills in individual swine operations. Air quality testing and oxygen level testing should be conducted prior to each entry into a confined space area. Personal protective equipment may include: • harnesses • skin protectants • gas masks • air packs • nonexplosive tools • alarm sensors and equipment. Emergency plans include: • buddy systems • establishing exit routes • arranging communication signals, devices • having emergency first-aid equipment readily available.

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Course: Swine Handling and Welfare 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
Facility Environmental Controls	*The student will:* • explain the purpose of environmental controls in swine operations • identify the design, location and main components of the available heating and ventilating system in buildings holding swine • describe the function of each of the major components of the heating and ventilating system • describe and explain the appropriate temperature for each pig grouping area of a pig barn • describe the seasonal procedures used to monitor the air quality in farm buildings • explain why extra monitoring may be necessary in adverse weather conditions • identify and describe the serving and cleaning procedures used to minimize breakdowns and hazards in environmental control devices.	
Personal Work Skills	• demonstrate employability skills, including: – verbal and nonverbal communication – goal setting and career planning – time management – basic financial management.	Students should be advised that their personal work skills will be expected to improve throughout their involvement in the Green Certificate Program. Assessment of personal work skills will be based on growth from previous assessments of personal work skills.

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Course: **Swine Health and Operations 33**

Program: Green Certificate

Credits: 5

Corequisite: CTR1210: Personal Safety (Management)
Note: Students are required to complete the corequisite course prior to or concurrent with their enrollment in the first course of the Swine Production Technician specialization.

Description: Students demonstrate a working knowledge of swine anatomy, basic disorders and diseases of swine, and the herd's health program; demonstrate the ability to handle and administer medications and vaccines; demonstrate knowledge of the farm's operating management systems, including indicators, goals and targets, Alberta hog marketing strategies, and quality assurance programs; and demonstrate effective and appropriate employability skills.

Parameters: Each of the three courses that constitute the Swine Production Technician specialization is designed to be delivered off campus. The annual inspection and approval of the work station, and the monitoring, supervision and assessment of each student's progress and performance must be done in accordance with the procedures specified in the Off-Campus Education policy.

Curriculum and Assessment Standards

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate the ability to maintain swine health and nutrition, by: – interpreting labels on medications – handling and administering medications and vaccines – demonstrating a working knowledge of swine anatomy – identifying common swine disorders and diseases – demonstrating an understanding of swine nutrition	*Assessment of student achievement should be based on:* • ongoing assessment of student performance, which is conducted: – on a daily basis by the student's on-farm trainer in regular consultation with the student's supervising teacher • certification testing, which is conducted by a Green Certificate Assessor designated by AAFRD and includes: – a performance assessment of practical knowledge and skills – a written examination. Successful completion of this course will be credited toward the attainment of the Swine Production Green Certificate Technician credential.	35%

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Course: Swine Health and Operations 33 (continued)

Prescribed General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:		
• maintain facilities and operate equipment, by: – using fire extinguishers – performing basic first aid		20%
• operate farm management systems, by: – demonstrating knowledge of production indicators, goals and targets – demonstrating knowledge of Alberta's hog marketing strategies – demonstrating knowledge of quality assurance programs		25%
• perform artificial insemination, as necessary		10%
• demonstrate effective and appropriate employability skills.		10%

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Course: Swine Health and Operations 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
	The student will:	
Health and Nutrition • Treatment and Drugs	• identify types of drugs used to treat swine, and describe the uses for each drug • read and correctly interpret drug labels and product information • identify potential contamination hazards when handling drugs • identify methods for minimizing contamination • identify common drug administration methods and procedures • follow proper procedure and administer appropriate treatment • monitor the animal's health, and report on posttreatment complications • operate a health record system for individual animals and pens of animals • maintain a drug administration inventory system • identify and describe: – personal hazards associated with handling and storing drugs used with animals – techniques for minimizing personal hazards associated with handling and storing drugs used with animals	Drug types include: • antibiotics • sulfonamides. Label information may include: • dosage • administration style • expiration date • storage • methods of disposal • vaccines.
• Swine Anatomy	• define anatomy, physiology and organ • identify, describe and name the main organs of a swine's anatomical systems: – digestive – reproductive – respiratory – muscular – skeletal – nervous – circulatory	Swine anatomy and physiology may be learned through study of specified textbooks, through on-the-job dissection of a pig and/or through an anatomical model or drawings. The name of different cuts of meat may vary. Students should be encouraged to consult with a local butcher and/or study a meat cutter's butchering chart.

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Concept	Prescribed Specific Outcomes	Notes
(continued) • Swine Anatomy	*The student will:* • describe the main functions/roles of the major organs that form each of the swine's anatomical systems • identify the locations, and describe and name basic cuts of a pig used for food	
• Swine Disorders and Diseases	• explain why the early identification and treatment of animal disorders and diseases is important to a hog farm's animal management practices • describe the basic nature and characteristics of common swine disorders and diseases, including: – MMA complex – ileitis – erysipelas – campyo – prolapses • describe diseases causing reproductive failure, including: – leptospirosis – entovirus – parvovirus – PRR syndrome • identify and describe disorders and diseases affecting baby pigs, including: – white scours – anemia – transmissible gastroenteritis (TGE) – encephalomyelitis – streptococci – greasy pig – splay leg – shaker – navel bleeding • identify and describe treatment and drug protocols used on the farm to treat each disorder and disease	The monitoring and maintenance of animal health is critical to a hog farm's profitability and survival. Characteristics of common disorders and diseases include: • MMA complex—udder related disorder • ileitis—inflammation of the ileum • erysipelas—skin and blood disorder • campyo—systemic bacterial disease • prolapses—disease of the uterus Characteristics of disorders and diseases affecting baby pigs include: • white scours—E. coli infection affecting the digestive tract • anemia—low red blood cell count • transmissible gastroenteritis (TGE)—digestive disease causing death of the animal • encephalomyelitis—inflammation of the animal's brain • streptococci—systemic bacterial infection • greasy pig—skin and systemic disease • splay leg—congenital condition • shaker—animal's body shakes; an untreatable condition • navel bleeding.

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Course: Swine Health and Operations 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
• Swine Nutrition	*The student will:* • define nutrition and nutrient • explain the importance of nutrition to the swine production process • identify and describe the role of the following nutrients in swine production: – "energy" – protein/amino acids – vitamins and minerals – water • identify the different nutrient needs for energy and protein of different classes of swine • explain the terms: – average daily gain (ADG) – feed conversion • explain the effect of proper nutrition on the average daily gain and feed conversion of swine • identify and describe ingredients used in common swine rations.	"Energy" is used to describe a combination of carbohydrates and fats. Vitamin and mineral components in swine nutrition include: • magnesium • calcium • phosphorus. Classes of swine include: • nursing sows • dry sows • gilts • boars • barrows • baby pigs • weaners • growers • finishers • split sex. ADG refers to either the weight gained daily or the weight gained in some other specified period. Feed conversion refers to the number of kilograms of feed needed to produce one kilogram of body weight. Swine rations may contain one or a combination of the following ingredients: • barley • wheat • field peas • canola.

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Concept	Prescribed Specific Outcomes	Notes
Facility Maintenance and Equipment Operation	*The student will:*	
• Fire Extinguishers	• describe the basic components of fire	Basic components are: • fuel • heat • air.
	• describe methods of controlling each component of fire	
	• identify and describe classes of fires	
	• identify and describe the capacity and operational time of available types of fire extinguishers	Students should be encouraged to read and interpret the label on each extinguisher to determine capacity and approximate operating time. For example: • a 10 pound carbon dioxide extinguisher will operate for 8–10 seconds • a 10 pound dry powder extinguisher will operate for 8–25 seconds.
	• identify the appropriate type of extinguisher material/fire extinguisher for each type of fire	
	• identify classes of fires possible: – on a truck or tractor – in a farm shop – in a livestock building	
	• identify the hazardous areas and seasonal factors affecting fire risk: – on a truck or tractor – in a farm shop – in a livestock building	
	• assess the cause or source of a fire, and take steps to prevent reignition	
	• identify locations of fire extinguishers	
	• determine the operating procedure for each type of fire extinguisher	
• Basic First Aid	• describe the purpose of first aid	Students are required to complete CTR1210: Personal Safety (Management) as a corequisite to the first course taken in the Swine Production Technician specialization. Some students will, therefore, have been trained in emergency first aid, and some will have attained a recognized emergency first aid credential.
	• distinguish between: – basic first aid – emergency first aid – standard first aid	
	• demonstrate the ability to: – perform cardiopulmonary resuscitation (CPR) – aid a choking victim – treat severe bleeding – handle shock.	

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Course: Swine Health and Operations 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
	The student will:	
Operating Management Systems		
• Production Indicators, Goals and Targets	• identify and describe factors influencing a farm's production indicators • define the notion of rule of thumb • describe rules of thumb used to set goals and targets • identify and describe the farm unit's desired numbers, indices or ratios	
• Alberta's Hog Marketing Strategies	• identify and describe organizations involved in pork production in Alberta • identify and describe the purpose of farrowing records • identify and describe the basic process of marketing hogs through the Western Hog Exchange • describe the movement of a typical market hog through the system, from preparation, to shipping and then to slaughtering	Organizations involved in pork production include: • Alberta Pork • Western Hog Exchange • Western Hog Growers.
	• identify and describe the basis of the hog grading system • describe how the hog grading system relates to a current market report on daily hog marketings • read and interpret data that reports on the farm's marketing results	The hog grading system determines the index for each animal. Factors addressed by the indexing system include: • dressed weight • back/loin fat • lean measurement • lean yield percentage.
• Quality Assurance Programs	• identify and describe the goals of the Canadian Pork Quality Assurance Program (CPQAP) • identify and describe the implications and advantages to a swine operation of participating in a quality assurance program • identify and describe who manages available quality assurance programs	CPQAP is concerned with: • enhancing the market share of pork in food consumption • ensuring maintenance of processing standards • establishing world competitiveness through industry quality and reputation

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Concept	Prescribed Specific Outcomes	Notes
(continued) • Quality Assurance Programs	*The student will:* • identify and describe the standards, procedures and protocols required to qualify as a subscriber to a program • demonstrate record-keeping procedures needed under each program.	• enhancing market access.
Perform Artificial Insemination, Where Applicable	• identify and describe the basic advantages and disadvantages of artificial insemination (AI) • identify and describe the relative merits of boars being offered for sale by artificial insemination suppliers • identify and describe time limits for handling and using: – fresh liquid semen – frozen semen • identify and describe the: – stages of the heat/estrus cycle – time period of standing heat – optimum effective insemination period • describe normal sow behaviour at each stage of the AI process • identify and describe the process of accessing semen for AI, from the time of order placement to arrival on the farm • demonstrate proper procedures for handling fresh liquid semen, from its arrival on the farm to its use on the sow • determine the time needed to breed and to prepare a sow for AI • demonstrate AI on a sow and a subsequent AI, where necessary • demonstrate breeding follow-up procedures with AI equipment and remaining semen • complete the appropriate mating information records.	Dependent upon the operation of the farm, students may be required to learn about and assist in the process of artificial insemination.

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Course: Swine Health and Operations 33 (continued)

Concept	Prescribed Specific Outcomes	Notes
Personal Work Skills	*The student will:* • demonstrate employability skills, including: – verbal and nonverbal communication – goal setting and career planning – time management – basic financial management.	Students should be advised that their personal work skills will be expected to improve throughout their involvement in the Green Certificate Program. Assessment of personal work skills will be based on growth from previous assessments of personal work skills.

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RESOURCES

The Green Certificate Program is supported by a variety of resources, including:

- *Off-campus Education Guide for Administrators, Counsellors and Teachers,* Alberta Education, 1997
- *Career Transitions Guide to Standards and Implementation*, Alberta Education, 1997
- *Beef Herd Operations: Cow–Calf Production Technician Skill Profile and Performance Standards,* AAFRD, Current Edition
- *Dairy Production Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Feedlot Production Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Field Crop Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Irrigated Field Crop Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Irrigated Field Crop Production Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Sheep Production Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- *Swine Farrow to Finish Production Technician Skill Profile and Performance Standards*, AAFRD, Current Edition
- Other specialization-related resources as listed in the current AAFRD Publications Guide.

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